


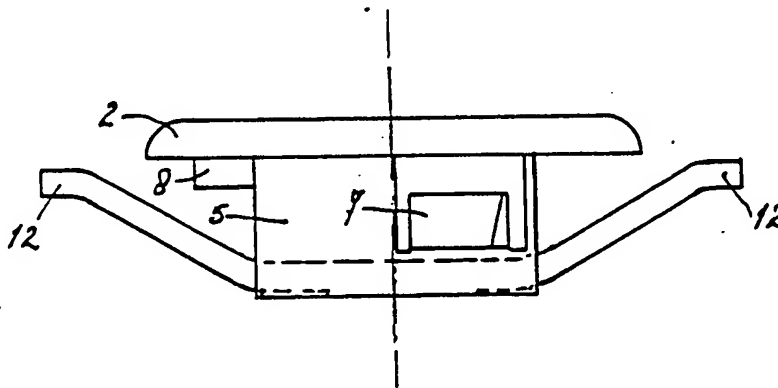
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<p>(21) International Application Number: PCT/NL93/00141</p> <p>(22) International Filing Date: 5 July 1993 (05.07.93)</p> <p>(30) Priority data: 9201437 11 August 1992 (11.08.92) NL</p> <p>(71)(72) Applicant and Inventor: DAUTZENBERG, Joseph, Hubertus [NL/NL]; Oranje Nassaustraat 1, NL-6372 GJ Landgraaf (NL).</p> <p>(81) Designated States: AT, AU, BB, BG, BR, BY, CA, CH, CZ, DE, DK, ES, FI, GB, HU, JP, KP, KR, KZ, LK, LU, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SK, UA, US, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p>	<p>Published <i>With international search report.</i></p> <p style="text-align: right;">(D7)</p> <p style="text-align: center;">OFICINA ESPAÑOLA DE PATENTES Y MARCAS Dpto. INFORMACION TECNOLÓGICA REFROGRAFIA Panamá, 1 - Madrid 28971</p> 	

(54) Title: **DEVICE FOR REMOVING COMPACT DISCS FROM THEIR CONTAINERS**

(57) Abstract

The invention is a device for removing compact discs from their containers. The top of the device rests on the mounting elements in the holder tray. Two or more spring elements are attached to the cylindrical section of the device, which fits between but does not touch the mounting elements. The spring elements are smaller than the gaps between the mounting elements and rest lightly against the compact disc. A cam prevents the device from rotating, and cams are also provided to prevent the device from dropping out. When the device is pressed down, the mounting elements move toward each other and the compact disc is released and pressed upwards by the spring elements so that the compact disc can be removed.

Device for removing compact discs from their containers

The invention is a device for simplifying the removal of compact discs from their containers. Compact discs are usually packaged in plastic boxes, containing a holder tray which incorporates a rosette of resilient, inverted-L-shaped, mounting elements, which keep the compact disc immobile in the box.

It has been found that the compact disc is held so firmly in its container that the disc bends as it is removed, and can thus easily suffer damage by being dropped when it jumps back into shape.

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The invention offers a solution to this problem by way of a push button, which is positioned on the rosette of mounting elements and is equipped with a spring element that rests against the compact disc. The spring element lifts the compact disc after the device has been pressed down.

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The invention is described with reference to the drawings.

Fig. 1 shows a top view of the partially removed push button.

Fig. 2 shows a section of the device with the compact disc in two positions.

Fig. 3 shows a version of the device with a separate spring element.

Fig. 4 shows a version with an ejector element and separate spring.

Fig. 5 shows a section along the line 5-5

25 In Fig. 1 the device is indicated by (1). The top (2) is supported by the mounting elements (3) in the holder tray (4). Attached to the top (2) is a cylindrical part (5) that fits easily between the mounting elements (3). Attached to the cylindrical parts (5) are spring elements (6) that are thinner than the gaps between the mounting elements (3).
30 Cams (7) on the cylindrical elements (5) prevent the device (1) from dropping out of the holder tray (4). A cam (8) is fitted below the top (2) to prevent the device (1) from rotating, thus preventing the spring elements (6) coming under the mounting elements (3).

35 Fig. 2 shows the compact disc as it is held in place by the mounting elements (3) in the holder tray (4). Section (10) of each mounting

element (3) is slightly conical, so that the compact disc is pressed on to the holder tray (4). (11) shows the compact disc immediately after the device (1) has been pressed. Pressing down the device (1) causes the mounting elements (3) to bend downwards under the top (2) of the device 05 (1), so that section (10) of each mounting element (3) moves towards the centre of the holder tray (4). The compact disc (9, 11) is then released and brought into position (11) by the spring element (6), where it is free of the holder tray (4) and can be easily removed from the container. The elasticity of the spring elements (6) is sufficient to 10 lift the compact disc but not sufficient to break the grip of the mounting elements (3).

It is advantageous for the device (1) to be made of plastic in one piece, as an injection moulded part. Fig. 3 shows a variant with a 15 separately fitted spring element (12) that can be made of a material with better elastic properties.

Fig. 4 shows a variant in which the ejector element is formed by a cylinder (13) that fits into the device; two ejector arms (14) and a 20 spring (15) are attached to the cylinder (13), the spring being positioned in a recess in cylinder (13). The device has two grooves (16) for this purpose.

The drawings also show a variant with openings (17) in the top; these 25 are present for technical reasons associated with the injection moulding process. More complex moulds can be used to manufacture the device without openings in the top.

Claims

- 1) Device for removing compact discs (9, 11) from the holder trays (4) in their containers characterized in that the device (1) consists of a top (2) which has a diameter which is less than the central opening in the compact disc (9, 11) and which rests on the resilient mounting elements (3) of the holder tray (4), and having a flexible ejector element (6) attached to the cylinder (5) of the device (1) which serves to lift the compact disc (9, 11).
- 2) Device as claimed in claim 1), characterised in that the ejector element consists of a cylinder (13) that incorporates a compression spring (15) and is fitted with two or more ejector arms (14).
- 3) Device as claimed in claims 1) and 2), characterised in that the device (1) is manufactured from resilient plastic and that the ejector element (6) is an integral part of the device.
- 4) Device as claimed in claims 1), 2) and 3), characterised in that the device (1) is manufactured from plastic and the ejector element is a spring (12) that is connected to the device.
- 5) Device as claimed in claims 1), 2), 3) and 4), characterised in that the device (1) is manufactured from plastic and fitted with snap fasteners (7) that fall behind the mounting elements (3) in the holder tray (4).

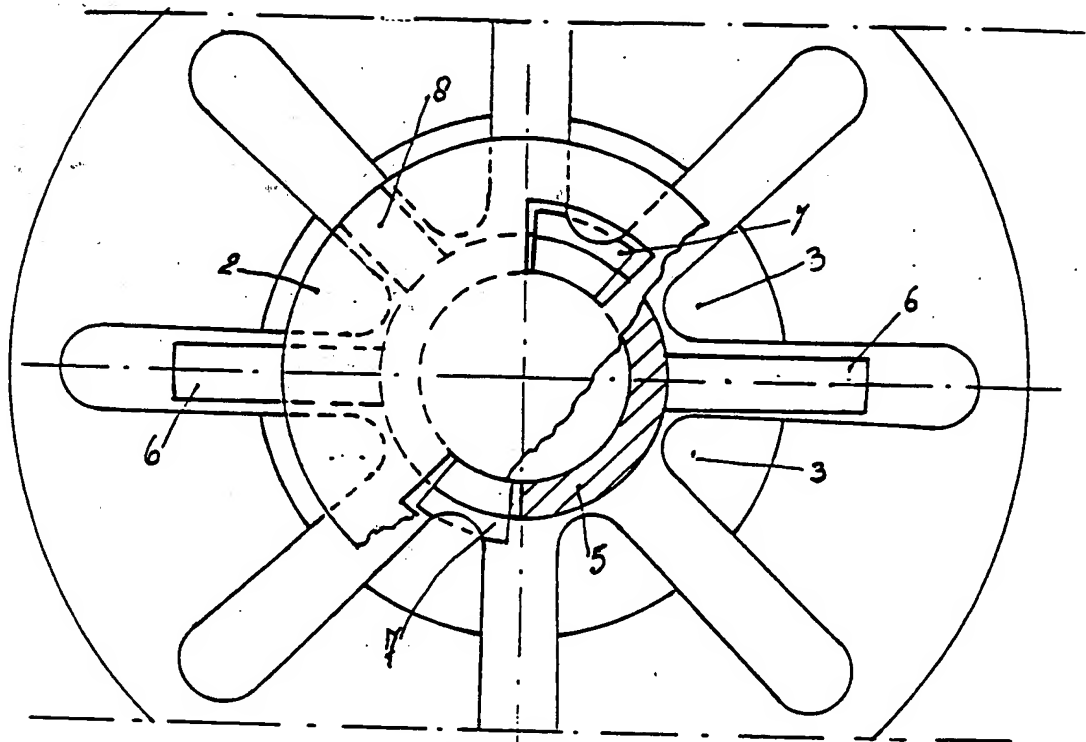


FIG. 1

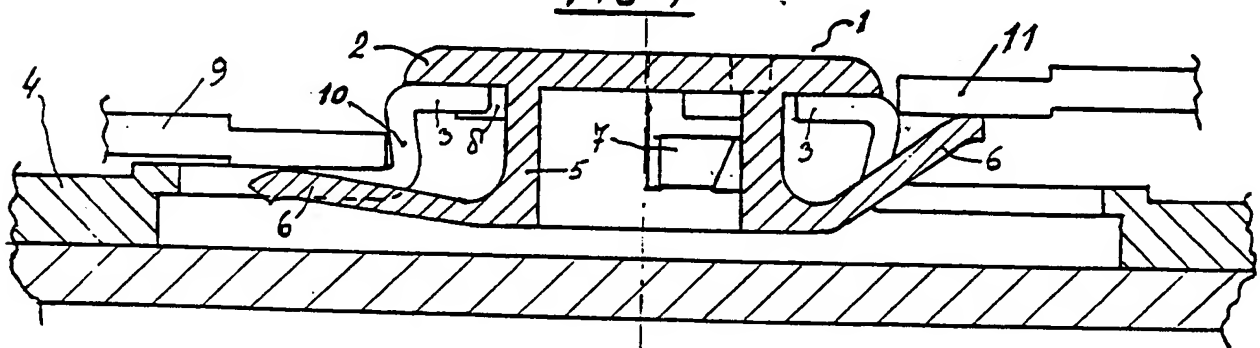


FIG. 2

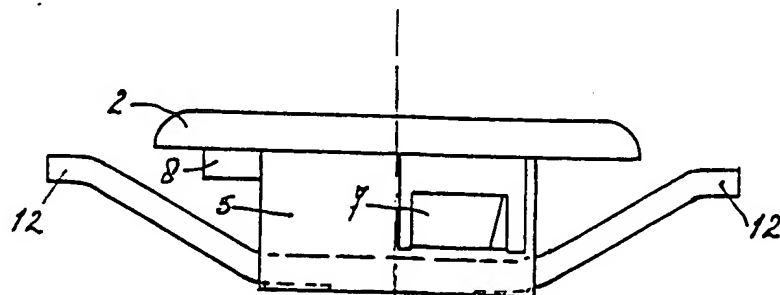
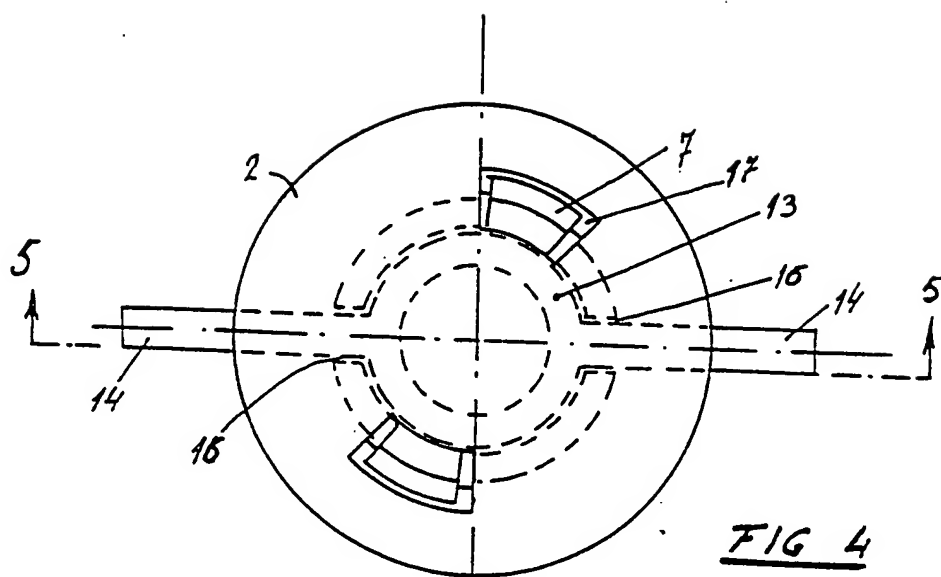
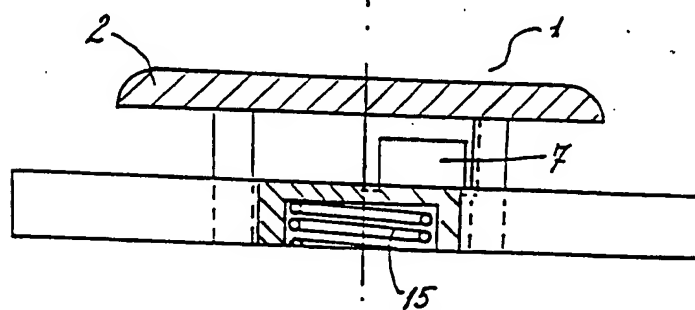


FIG. 3

FIG 4FIG 5

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/NL 93/00141

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ⁶		
According to International Patent Classification (IPC) or to both National Classification and IPC: Int.Cl. 5 G11B33/04; G11B23/00		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
Int.Cl. 5	G11B	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸		
III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹		
Category ¹⁰	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
X	EP,A,0 429 195 (P.G.WYATT) 29 May 1991 see column 2, line 36 - column 5, line 17; figures ---	1-5
X	DE,A,3 715 187 (M.HAGER) 24 November 1988 see claims 1-4; figures ---	1-5
X	EP,A,0 356 539 (SHIN-ETSU POLYMER CO. LTD.) 7 March 1990 see column 4, line 28 - column 8, line 14; figures 3-9B ---	1-5
A	DE,A,3 425 579 (POLYGRAM GMBH) 16 January 1986 see page 8, line 4 - page 10, line 24; figures 2-11 --- -/-	1,3,5
<p>¹⁰ Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&" document member of the same patent family</p>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search 13 OCTOBER 1993		Date of Mailing of this International Search Report 22. 10. 93
International Searching Authority EUROPEAN PATENT OFFICE		Signature of Authorized Officer DECLAT M.G.

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)		
Category *	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.
A	DE, C, 144 596 (R. BURGI) 13 January 1903 -----	

**ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO.**

NL 9307141
SA 76489

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.
The members are as contained in the European Patent Office EDP file on
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13/10/93

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A-0429195	29-05-91	None	
DE-A-3715187	24-11-88	None	
EP-A-0356539	07-03-90	US-A- 4793479	27-12-88
DE-A-3425579	16-01-86	None	
DE-C-144596		None	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82